10/007,621

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FILE 'HOME' ENTERED AT 07:56:53 ON 12 NOV 2006

=> file biosis medline caplus wpids uspatfull
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                                                           ENTRY    SESSION
FULL ESTIMATED COST                                         0.21       0.21

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FILE 'WPIDS' ENTERED AT 07:57:18 ON 12 NOV 2006
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FILE 'USPATFULL' ENTERED AT 07:57:18 ON 12 NOV 2006
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*** YOU HAVE NEW MAIL ***

=> s modified nucleotide?
L1        11324 MODIFIED NUCLEOTIDE?

=> s l1 and pyrophosphorolysis (3a) inhibit?
L2            6 L1 AND PYROPHOSPHOROLYSIS (3A) INHIBIT?

=> s l2 and base (4a) incorpor?
L3            3 L2 AND BASE (4A) INCORPOR?

=> dup rem l3
PROCESSING COMPLETED FOR L3
L4            3 DUP REM L3 (0 DUPLICATES REMOVED)

=> d l4 bib abs 1-3

L4   ANSWER 1 OF 3  USPATFULL on STN
AN     2003:194996  USPATFULL
TI     Enzymatic nucleic acid synthesis: compositions and methods for altering
       monomer incorporation fidelity
IN     Hardin, Susan H., Bellaire, TX, UNITED STATES
       Gao, Xiaolian, Houston, TX, UNITED STATES
       Briggs, James, Katy, TX, UNITED STATES
       Willson, Richard, Houston, TX, UNITED STATES
       Tu, Shiao-Chun, Houston, TX, UNITED STATES
PI     US 2003134807      A1   20030717
AI     US 2001-7621       A1   20011203 (10)
PRAI   US 2000-250764P     20001201 (60)
DT     Utility
FS     APPLICATION
LREP   ROBERT W STROZIER, PLLC, 2925 BRIARPARK, SUITE 930, HOUSTON, TX, 77042
CLMN   Number of Claims: 20
ECL    Exemplary Claim: 1
DRWN   14 Drawing Page(s)
LN.CNT 3557
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB     Nucleotide triphosphate probes containing a molecular and/or atomic tag
       on a a γ and/or β phosphate group and/or a base moiety having
       a detectable property are disclosed, and kits and method for using the
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tagged nucleotides in sequencing reactions and various assay. Also, phosphate and polyphosphate molecular fidelity altering agents are disclosed.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4 ANSWER 2 OF 3 WPIDS COPYRIGHT 2006 THE THOMSON CORP on STN
AN 2002-527716 [56] WPIDS
DNC C2002-149433 [56]
TI Composition for altering base incorporation fidelity of nucleotide polymerizing agent, comprises a modified nucleotide including a molecular and/or atomic tag
DC B04; D16
IN BRIGGS J; BRIGGS J M; GAO X; HARDIN S H; TU S; TU S C; WILLSON R; XIAOLIAN G
PA (BRIG-I) BRIGGS J; (GAOX-I) GAO X; (HARD-I) HARDIN S H; (TUSS-I) TU S; (VISI-N) VISIGEN BIOTECHNOLOGIES INC; (WILL-I) WILLSON R
CYC 95
PIA WO 2002044425 A2 20020606 (200256)* EN 97[14]
AU 2002027156 A 20020611 (200264) EN
US 20030134807 A1 20030717 (200348) EN
EP 1354064 A2 20031022 (200370) EN
AU 2002227156 A8 20051013 (200611) EN
ADT WO 2002044425 A2 WO 2001-US45819 20011203; US 20030134807 A1 Provisional US 2000-250764P 20001201; EP 1354064 A2 EP 2001-996079 20011203; US 20030134807 A1 US 2001-7621 20011203; EP 1354064 A2 WO 2001-US45819 20011203; AU 2002027156 A AU 2002-27156 20011203; AU 2002227156 A8 AU 2002-227156 20011203
FDT AU 2002027156 A Based on WO 2002044425 A; EP 1354064 A2 Based on WO 2002044425 A; AU 2002227156 A8 Based on WO 2002044425 A
PRAI US 2000-250764P 20001201
US 2001-7621 20011203
AN 2002-527716 [56] WPIDS
AB WO 2002044425 A2 UPAB: 20050526
NOVELTY - A composition (I) comprising a modified nucleotide including a molecular and/or atomic tag, where the nucleotide alters base incorporation fidelity in a nucleotide polymerizing agent relative to a base incorporation fidelity of the agent in the absence of the modified nucleotide, is new.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(1) a kit (II) for performing a nucleotide polymerizing reaction comprising polymerizing reagents and a modified nucleotide including an atomic and/or molecular tag, where the modified nucleotide alters extension fidelity;

(2) inhibiting (M) or preventing pyrophosphorolysis during synthesis of a nucleic acid molecule, by:

(a) combining a primer with a nucleic acid template under conditions sufficient to form a hybridized product; and

(b) incubating the hybridized product with a polymerase in the presence or absence of an enzyme selected from a pentosyltransferase, a phosphotransferase with an alcohol group as an acceptor, a nucleotidyltransferase, and a carboxy-lyase, under conditions sufficient to form a second nucleic acid molecule complementary to all or a portion of the nucleic acid template, where a tagged nucleotide comprising an atomic and/or molecular tag or group attached to and/or associated with a beta and/or gamma-phosphate and/or a base group of the nucleotide is added at either or both steps to inhibit or prevent pyrophosphorolysis during synthesis of a nucleic acid molecule.

ACTIVITY - Virucide; Cytostatic; Anti-HIV. No biological data is given.

MECHANISM OF ACTION - Pyrophosphorolysis

inhibitor.

USE - (I) is useful for altering base incorporation fidelity of a nucleotide polymerizing agent relative to a base incorporation fidelity of the agent in the absence of the modified nucleotide, by adding (I) to a nucleotide polymerization medium comprising a nucleotide polymerizing agent. (I) is useful in an assay for extending a nucleotide sequence, by adding (I) to the assay, where the assay is selected from genotyping for in vitro reproductive method (human and other organisms), single nucleotide polymorphism (SNP) detection, DNA sequencing, RNA sequencing, single nucleotide extension assays, amplified DNA product assays, rolling circle product assays, polymerase chain reaction (PCR) product assays, allele-specific primer extension assays, single-molecule arrays (DNA, RNA, protein) assays, and drug toxicity evaluation assays. (I) is useful for making blunt-ended fragments by amplifying a DNA fragment in the presence of a nucleotide including a molecular and/or atomic tag on a gamma phosphate group and/or a base group, where the tag alters fidelity of base incorporation and decreases or eliminates non-templated addition of a base to the 3' end of the DNA fragment being amplified. (I) is useful for increasing the fidelity of replication by administering a therapeutically effective amount of a nucleotide including a molecular and/or atomic tag on a lambda phosphate group to an animal including a human, where the nucleotide is designed to increase base incorporation fidelity during replication, where the replication is caused by a human immunodeficiency virus (HIV) virus (claimed). (I) is useful for improving nucleic acid sequencing determinations, in various assays, for enzymatic DNA synthesis with altered fidelity, for template-mediated primer extension reaction, for identifying a base that targets a position in a sample DNA sequence, and for constructing drugs for human or animal use. (I) is useful for ameliorating symptoms of animals including humans infected with a retrovirus, to increase the fidelity of the viruses reverse transcriptase, decrease mutation, increase immune response to the virus, increase the effectiveness of medications to the virus, and to ameliorate symptoms associated with viral infection, cancer and aging, and for reducing the evolutionary tendency of retrovirus such as HIV.

ADVANTAGE - (I) enables sequencing reactions to be performed which allow rapid detection, have increased fidelity and provision of sequence information and which are simple and quick to perform, lending themselves readily to automation. (I) when used in sequencing reactions provides ultra-sensitivity, unprecedented economy and substantial improvements over the methods of prior art. (I) opens up the possibility for an automated approach for large-scale, non-electrophoretic sequencing procedures, which allow for continuous measurement of the progress of the polymerization reaction with time. The sequencing method using (I) is suitable for handling of multiple samples in parallel. (I) enables simple and rapid detection of single base changes.

L4 ANSWER 3 OF 3 USPATFULL on STN
AN 97:24884 USPATFULL
TI DNA polymerase having modified nucleotide binding site for DNA sequencing
IN Tabor, Stanley, Cambridge, MA, United States
Richardson, Charles, Chestnut Hill, MA, United States
PA President & Fellow of Harvard College, Cambridge, MA, United States (U.S. corporation)
PI US 5614365 19970325
AI US 1994-337615 19941110 (8)
RLI Continuation-in-part of Ser. No. US 1994-324437, filed on 17 Oct 1994, now abandoned
DT Utility
FS Granted
EXNAM Primary Examiner: Jones, W. Gary; Assistant Examiner: Rees, Dianne
LREP Lyon & Lyon

CLMN Number of Claims: 108
ECL Exemplary Claim: 1
DRWN 6 Drawing Figure(s); 6 Drawing Page(s)
LN.CNT 3999
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Modified gene encoding a modified DNA polymerase wherein the modified polymerase incorporates dideoxynucleotides at least 20-fold better compared to the corresponding deoxynucleotides as compared with the corresponding naturally-occurring DNA polymerase.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

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     (FILE 'HOME' ENTERED AT 07:56:53 ON 12 NOV 2006)

     FILE 'BIOSIS, MEDLINE, CAPLUS, WPIDS, USPATFULL' ENTERED AT 07:57:18 ON
     12 NOV 2006
L1        11324 S MODIFIED NUCLEOTIDE?
L2            6 S L1 AND PYROPHOSPHOROLYSIS (3A) INHIBIT?
L3            3 S L2 AND BASE (4A) INCORPOR?
L4            3 DUP REM L3 (0 DUPLICATES REMOVED)

=> s l1 and alter? (4a) base? (4a) incorpor?
L5           32 L1 AND ALTER? (4A) BASE? (4A) INCORPOR?

=> s l5 and inhibitor
L6           22 L5 AND INHIBITOR

=> s l6 and pyrophosphorolysis
L7            1 L6 AND PYROPHOSPHOROLYSIS

=> d l7 bib abs

L7   ANSWER 1 OF 1  WPIDS COPYRIGHT 2006       THE THOMSON CORP on STN
AN   2002-527716 [56]   WPIDS
DNC  C2002-149433 [56]
TI   Composition for altering base incorporation
     fidelity of nucleotide polymerizing agent, comprises a modified
     nucleotide including a molecular and/or atomic tag
DC   B04; D16
IN   BRIGGS J; BRIGGS J M; GAO X; HARDIN S H; TU S; TU S C; WILLSON R; XIAOLIAN
     G
PA   (BRIG-I) BRIGGS J; (GAOX-I) GAO X; (HARD-I) HARDIN S H; (TUSS-I) TU S;
     (VISI-N) VISIGEN BIOTECHNOLOGIES INC; (WILL-I) WILLSON R
CYC  95
PIA  WO 2002044425   A2 20020606 (200256)* EN  97[14]
     AU 2002027156   A  20020611 (200264)  EN
     US 20030134807  A1 20030717 (200348)  EN
     EP 1354064      A2 20031022 (200370)  EN
     AU 2002227156   A8 20051013 (200611)  EN
ADT  WO 2002044425 A2 WO 2001-US45819 20011203; US 20030134807 A1 Provisional
     US 2000-250764P 20001201; EP 1354064 A2 EP 2001-996079 20011203; US
     20030134807 A1 US 2001-7621 20011203; EP 1354064 A2 WO 2001-US45819
     20011203; AU 2002027156 A AU 2002-27156 20011203; AU 2002227156 A8 AU
     2002-227156 20011203
FDT  AU 2002027156 A Based on WO 2002044425 A; EP 1354064 A2 Based on WO
     2002044425 A; AU 2002227156 A8 Based on WO 2002044425 A
PRAI US 2000-250764P 20001201
     US 2001-7621 20011203
AN   2002-527716 [56]   WPIDS
AB   WO 2002044425 A2   UPAB: 20050526
      NOVELTY - A composition (I) comprising a modified
     nucleotide including a molecular and/or atomic tag, where the
     nucleotide alters base incorporation
     fidelity in a nucleotide polymerizing agent relative to a base
     incorporation fidelity of the agent in the absence of the modified
     nucleotide, is new.
           DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the
     following:
           (1) a kit (II) for performing a nucleotide polymerizing reaction
     comprising polymerizing reagents and a modified
     nucleotide including an atomic and/or molecular tag, where the
     modified nucleotide alters extension fidelity;
           (2) inhibiting (M) or preventing pyrophosphorolysis
```

during synthesis of a nucleic acid molecule, by:

(a) combining a primer with a nucleic acid template under conditions sufficient to form a hybridized product; and

(b) incubating the hybridized product with a polymerase in the presence or absence of an enzyme selected from a pentosyltransferase, a phosphotransferase with an alcohol group as an acceptor, a nucleotidyltransferase, and a carboxy-lyase, under conditions sufficient to form a second nucleic acid molecule complementary to all or a portion of the nucleic acid template, where a tagged nucleotide comprising an atomic and/or molecular tag or group attached to and/or associated with a beta and/or gamma-phosphate and/or a base group of the nucleotide is added at either or both steps to inhibit or prevent pyrophosphorolysis during synthesis of a nucleic acid molecule.

ACTIVITY - Virucide; Cytostatic; Anti-HIV. No biological data is given.

MECHANISM OF ACTION - Pyrophosphorolysis inhibitor.

USE - (I) is useful for altering base incorporation fidelity of a nucleotide polymerizing agent relative to a base incorporation fidelity of the agent in the absence of the modified nucleotide, by adding (I) to a nucleotide polymerization medium comprising a nucleotide polymerizing agent. (I) is useful in an assay for extending a nucleotide sequence, by adding (I) to the assay, where the assay is selected from genotyping for in vitro reproductive method (human and other organisms), single nucleotide polymorphism (SNP) detection, DNA sequencing, RNA sequencing, single nucleotide extension assays, amplified DNA product assays, rolling circle product assays, polymerase chain reaction (PCR) product assays, allele-specific primer extension assays, single-molecule arrays (DNA, RNA, protein) assays, and drug toxicity evaluation assays. (I) is useful for making blunt-ended fragments by amplifying a DNA fragment in the presence of a nucleotide including a molecular and/or atomic tag on a gamma phosphate group and/or a base group, where the tag alters fidelity of base incorporation and decreases or eliminates non-templated addition of a base to the 3' end of the DNA fragment being amplified. (I) is useful for increasing the fidelity of replication by administering a therapeutically effective amount of a nucleotide including a molecular and/or atomic tag on a lambda phosphate group to an animal including a human, where the nucleotide is designed to increase base incorporation fidelity during replication, where the replication is caused by a human immunodeficiency virus (HIV) virus (claimed). (I) is useful for improving nucleic acid sequencing determinations, in various assays, for enzymatic DNA synthesis with altered fidelity, for template-mediated primer extension reaction, for identifying a base that targets a position in a sample DNA sequence, and for constructing drugs for human or animal use. (I) is useful for ameliorating symptoms of animals including humans infected with a retrovirus, to increase the fidelity of the viruses reverse transcriptase, decrease mutation, increase immune response to the virus, increase the effectiveness of medications to the virus, and to ameliorate symptoms associated with viral infection, cancer and aging, and for reducing the evolutionary tendency of retrovirus such as HIV.

ADVANTAGE - (I) enables sequencing reactions to be performed which allow rapid detection, have increased fidelity and provision of sequence information and which are simple and quick to perform, lending themselves readily to automation. (I) when used in sequencing reactions provides ultra-sensitivity, unprecedented economy and substantial improvements over the methods of prior art. (I) opens up the possibility for an automated approach for large-scale, non-electrophoretic sequencing procedures, which allow for continuous measurement of the progress of the polymerization reaction with time. The sequencing method using (I) is suitable for handling of multiple samples in parallel. (I) enables simple and rapid detection of single base changes.

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=> d his

     (FILE 'HOME' ENTERED AT 07:56:53 ON 12 NOV 2006)

     FILE 'BIOSIS, MEDLINE, CAPLUS, WPIDS, USPATFULL' ENTERED AT 07:57:18 ON
     12 NOV 2006
L1        11324 S MODIFIED NUCLEOTIDE?
L2            6 S L1 AND PYROPHOSPHOROLYSIS (3A) INHIBIT?
L3            3 S L2 AND BASE (4A) INCORPOR?
L4            3 DUP REM L3 (0 DUPLICATES REMOVED)
L5           32 S L1 AND ALTER? (4A) BASE? (4A) INCORPOR?
L6           22 S L5 AND INHIBITOR
L7            1 S L6 AND PYROPHOSPHOROLYSIS

=> s nucleotide (3a) polymerization
L8          836 NUCLEOTIDE (3A) POLYMERIZATION

=> s l8 and modified (4a) nucleotide?
   3 FILES SEARCHED...
L9          233 L8 AND MODIFIED (4A) NUCLEOTIDE?

=> s l9 and pyrophosphorolysis (5a) inhibit?
L10           3 L9 AND PYROPHOSPHOROLYSIS (5A) INHIBIT?

=> dup rem l10
PROCESSING COMPLETED FOR L10
L11           3 DUP REM L10 (0 DUPLICATES REMOVED)

=> s l11 not l3
L12           1 L11 NOT L3

=> d l12 bib abs

L12  ANSWER 1 OF 1  USPATFULL on STN
AN     2005:111529  USPATFULL
TI     Pyrophosphorolysis activated polymerization (PAP)
IN     Liu, Qiang, Arcadia, CA, UNITED STATES
       Sommer, Steve S., Duarte, CA, UNITED STATES
       Riggs, Arthur D., La Verne, CA, UNITED STATES
PA     City of Hope, Duarte, CA, UNITED STATES (U.S. corporation)
PI     US 2005095608      A1   20050505
AI     US 2004-798844     A1   20040312 (10)
RLI    Continuation of Ser. No. US 2003-434369, filed on 9 May 2003, PENDING
       Continuation-in-part of Ser. No. US 2002-269879, filed on 15 Oct 2002,
       PENDING Division of Ser. No. US 2001-789556, filed on 22 Feb 2001,
       GRANTED, Pat. No. US 6534269
PRAI   US 2000-184315P     20000223 (60)
       US 2000-187035P     20000306 (60)
       US 2000-237180P     20001003 (60)
       US 2002-379092P     20020510 (60)
DT     Utility
FS     APPLICATION
LREP   ROTHWELL, FIGG, ERNST & MANBECK, P.C., 1425 K STREET, N.W., SUITE 800,
       WASHINGTON, DC, 20005, US
CLMN   Number of Claims: 28
ECL    Exemplary Claim: 1
DRWN   33 Drawing Page(s)
LN.CNT 3854
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB     A novel method of pyrophosphorolysis activated polymerization (PAP) has
       been developed. In PAP, pyrophosphorolysis and polymerization by DNA
       polymerase are coupled serially for each amplification by using an
       activatable oligonucleotide P* that has a non-extendible
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3'-deoxynucleotide at its 3' terminus. PAP can be applied for exponential amplification or for linear amplification. PAP can be applied to amplification of a rare allele in admixture with one or more wild-type alleles by using an activatable oligonucleotide P* that is an exact match at its 3' end for the rare allele but has a mismatch at or near its 3' terminus for the wild-type allele. PAP is inhibited by a mismatch in the 3' specific sequence as far as 16 nucleotides away from the 3' terminus. PAP can greatly increase the specificity of detection of an extremely rare mutant allele in the presence of the wild-type allele. Specificity results from both pyrophosphorolysis and polymerization since significant nonspecific amplification requires the combination of mismatch pyrophosphorolysis and misincorporation by the DNA polymerase, an extremely rare event. Using genetically engineered DNA polymerases greatly improves the efficiency of PAP.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.